

# CSE 322 Autumn 2009

## Assignment #1

Due: Friday, October 9, 2009

**Reading assignment:** Read Sipser's book, sections 1.1 and 1.2; you should already have read Chapter 0.

### Problems:

1. Sipser's text, Exercise 1.3 (either edition).
2. For Example 1.11 in the 2nd edition of the text (Example 1.4 in the 1st edition), write out the sequence of states that machine  $M_4$  goes through in computing on input string *abaabba* and for input string *bbaaba*. Which of these strings is accepted by  $M_4$ ?
3. Sipser's text, Exercise 1.6 in the 2nd edition (Exercise 1.4 in the 1st edition), parts (b), (c), (d), (f), (h), (j). As documentation for your DFAs, for each state write a very brief description of the set of strings that end at that state.
4. Give a state diagram of a DFA recognizing the set of binary strings of length at least 3 that have a 0 in the next-to-last position. As documentation for your DFA, for each state write a very brief description of the set of strings that reach that state.
5. Sipser's text, Problem 1.36 in the 2nd edition. (Problem 1.29 in the first edition.)
6. (Extra credit) Sipser's text, Problem 1.37 in the 2nd edition. (Problem 1.30 in the first edition.)